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METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR  
PROACTIVELY OFFERING A NETWORK TURBO BOOST SERVICE TO END  
USERS

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# METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR PROACTIVELY OFFERING A NETWORK TURBO BOOST SERVICE TO END USERS

## RELATED APPLICATION

[0001] This application claims the benefit of and priority to U.S. Provisional Patent Application No. 60/470,650, filed May 15, 2003, the disclosure of which is hereby incorporated herein by reference as if set forth in its entirety.

## FIELD OF THE INVENTION

[0002] The present disclosure relates generally to a method of proactively offering a network turbo boost service to end users and in particular, to a method of proactively offering a network turbo boost service to end users when pre-selected triggering events occur.

## BACKGROUND OF THE INVENTION

[0003] Increasing amounts and types of information are becoming available via networks such as the Internet and various types of networks that allow access to the Internet, such as DSL networks and cable television networks. Consumers are downloading files to their personal computers and/or to their personal networks that contain information such as voice data, graphics data, audio-visual multimedia data (e.g., television programs, movies, audio) and other types of data. As the files consumers are downloading have become larger and larger in size, several corporations have introduced products aimed at reducing the amount of time it takes to download large files. Examples of such products include WebRocket and ActiveSpeed Internet Accelerator from Ascentive. These products are aimed at increasing the efficiency of the download process by optimizing the download from the user side of the process (e.g., personal computer and/or personal network). In addition, there are other manners of expediting the download process, such as utilizing a multi-link environment that is supported by some Internet Service

Providers (ISPs). The multi-link environment includes a user system (e.g., personal computer) that contains two modems and two telephone lines connected to the modems, which in turn are in communication with the ISP. In this manner, data may be downloaded at about twice the speed of a single modem.

[0004] ISPs are beginning to offer broadband "turbo boost" services that offer temporary access to improved transmission for a limited time in exchange for a per-use or standing fee. The improved transmission vehicle is typically an increase in potential bandwidth. Once a user subscribes to the service, such existing services are typically triggered by simple mechanisms such as: providing the turbo boost to all communications during a specified time period; or providing turbo boost whenever the user accesses a particular destination address or set of destination addresses specified by the user.

#### SUMMARY OF THE INVENTION

[0005] Embodiments of the invention include a method for proactively offering a network turbo boost service. The method includes receiving a set of one or more turbo boost triggering criteria associated with a user. A network is monitored for a task that meets at least one of the turbo boost triggering criteria. If the monitoring results in locating a task that meets at least one of the turbo boost triggering criteria, then the network turbo boost service is invoked for the task.

[0006] Other embodiments include a method for proactively offering a network turbo boost service. The method includes receiving a set of one or more turbo boost triggering criteria associated with a user. A network is monitored for a task that meets at least one of the turbo boost triggering criteria. If the monitoring results in locating a task that meets at least one of the turbo boost triggering criteria, then an offer is transmitted to the user to invoke the network turbo boost service for the task. The network turbo boost service is invoked for the task if the user responds to the offer by requesting that the network turbo boost service be invoked for the task.

[0007] Other embodiments of the invention include a method for proactively offering a network turbo boost service. The method includes receiving at least one of

a set of one or more turbo boost offer triggering criteria and a set of one or more turbo boost automatic triggering criteria associated with a user. A network is monitored for a task that meets at least one of the turbo boost offer triggering criteria or at least one of the turbo boost automatic triggering criteria. If the monitoring results in locating a task that meets at least one of the turbo boost offer triggering criteria, then an offer is transmitted to the user to invoke the network turbo boost service for the task. The network turbo boost service is invoked for the task if the user responds to the offer by requesting that the network turbo boost service be invoked for the task. If the monitoring results in locating a task that meets at least one of the turbo boost automatic triggering criteria, then the network turbo boost service is invoked for the task that meets the automatic triggering criteria.

[0008] Additional embodiments include a system for proactively offering a network turbo boost service. The system includes a network and a service provider (such as an Internet Service Provider) system in communication with the network. The service provider system includes instructions to implement a method including receiving a set of one or more turbo boost triggering criteria for a user via the network. The network is monitored for a task that meets at least one of the turbo boost triggering criteria. If the monitoring results in locating a task that meets at least one of the turbo boost triggering criteria, then an offer is transmitted to the user via the network to invoke the network turbo boost service for the task. The network turbo boost service is invoked for the task if the user responds to the offer by requesting that the network turbo boost service be invoked for the task.

[0009] Further embodiments include a computer program product for proactively offering a network turbo boost service. The computer program product includes a storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for performing a method including receiving a set of one or more turbo boost triggering criteria associated with a user. A network is monitored for a task that meets at least one of the turbo boost triggering criteria. If the monitoring results in locating a task that meets at least one of the turbo boost triggering criteria, then an offer is transmitted to the user to invoke the network turbo boost service for the task. The network turbo boost service is invoked for the task if

the user responds to the offer by requesting that the network turbo boost service be invoked for the task.

[0010] Other systems, methods, and/or computer program products according to embodiments will be or become apparent to one with skill in the art upon review of the following drawings and detailed description. It is intended that all such additional systems, methods, and/or computer program products be included within this description, be within the scope of the present invention, and be protected by the accompanying claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a block diagram of an exemplary system for proactively offering a network turbo boost service to users.

[0012] FIG. 2 depicts an exemplary process by which a user may be presented with an option to utilize a network turbo boost service in accordance with exemplary embodiments of the present invention.

[0013] FIG. 3 is a block diagram of illustrative triggers that may be utilized by exemplary embodiments of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

[0014] Exemplary embodiments of the present invention allow a service provider to present an option to an end user to utilize “turbo boost” when certain pre-specified “triggering” events or criteria are encountered. Examples of such triggering events include (but are not limited to): a manual end user request; a request from desktop client software in response to excessive time for a file transfer; a request from an application; the detection of a destination address for which high speed transfer might be recommended; and the detection of large files to be transferred. In addition, exemplary embodiments of the present invention may be utilized to automatically invoke turbo boost capability (without first offering it as an option to the end user) when pre-specified triggering events are detected. The list of triggering events may be created by a service provider and/or by a user.

[0015] Exemplary embodiments of the present invention allow a user to select from a variety of network turbo boost service triggering mechanisms. This enables the user to control the conditions under which the turbo boost option is presented. This may cause the network turbo boost service to be utilized more often and lead to increased revenues for the service provider. Exemplary embodiments of the present invention may be utilized in combination with any type of broadband access (e.g., cable, wireline DSL, wireless DSL, satellite).

[0016] Triggers may be network-based, user client-based, or application-based. Network-based triggers include detection of large files or specific application addresses potentially requiring network turbo boost services. Client-based triggers include manual user requests for turbo boost, the detection of large files to be uploaded (e.g., photographs), or the detection of a large file transfer time. Application-based triggers may be utilized when an application recognizes the need for high transfer speed (e.g., based on the size of a file to be downloaded or based on anticipated streaming video content). In exemplary embodiments of the present invention, the service provider provides a list of suggested triggering mechanisms that a user may add to their network turbo boost service triggering preference list. These triggering mechanisms may cause the network turbo boost option to be presented to the end user for user initiation or they may cause the network turbo boost service to be automatically initiated when the trigger event is detected. In alternate exemplary embodiments of the present invention, the service provider defines a list of triggering mechanisms. In other alternate exemplary embodiments of the present invention, an application provider system may cause the turbo boost option to be presented to the user or to be initiated.

[0017] FIG. 1 is a block diagram of an exemplary system for proactively offering a network turbo boost service to an end user 116. The system includes an end user 116 accessing a user client system 112. In exemplary embodiments of the present invention, the user client system 112 is a personal computer that is in communication with the service provider system 104 via a network. The user client system 112 includes a user interface 114 that is presented to the end user 116. The user interface 114 allows the end user 116 to specify trigger events to be stored in a

trigger profile system 110. The user interface 114 also allows the end user 116 to be presented with the option of invoking the network turbo boost service and to select the network turbo boost service.

[0018] The user interface 114 may display information to the end user 116 in a text and/or graphic format. In exemplary embodiments of the present invention, the text may be utilized to notify the end user 116 that the network turbo boost service is available and then allow the end user 116 to select an input button to invoke the service. In alternate exemplary embodiments of the present invention, the user interface 114 may display a green graphic for the end user 116 to select to invoke the turbo boost service and a red graphic for the end user 116 to select to decline invoking the network turbo boost service. The user interface 114 also allows the end user 116 to manually select the network turbo boost service for a particular network operation (e.g., a file download).

[0019] The system depicted in FIG. 1 also includes a service provider system 104 that includes trigger processing logic 106, a trigger detection system 108 and a trigger profile system 110. The trigger profile system 104 includes user and service provider triggering preference lists. Different end users 116 may have different triggering preference lists. As described previously, the triggering preference lists include information about when to offer the network turbo boost service to a user. In addition, the triggering preference list includes information about when to automatically initiate the network turbo boost service for a user. The trigger detection system 108 monitors the service provider network to determine what kind of signals are coming from the end user 116 and/or the service provider network. When the trigger detection system 108 detects a trigger event, it invokes the trigger processing logic 106.

[0020] An example of a trigger event that may be detected by the trigger detection system 108 is an end user 116 uploading a large file. Once the file is recognized as a large file (e.g., over a pre-selected size) by the trigger detection system 108, the trigger processing logic 106 is invoked to offer the option of using the network turbo boost service to the end user 116. Alternatively, the preference list

corresponding to the end user 116 may specify that the network turbo boost service be invoked without first checking with the end user 116 because the file is very large (e.g., over a second pre-selected size). In another example, an end user 116 may be in a hurry to download a particular file and may manually request that the network turbo boost service be invoked. In this case, the trigger detection system 108 would detect the manual request trigger and automatically invoke the network turbo boost service.

[0021] The trigger processing logic 106 presents the option of using the network turbo boost service to the end-user 116. As discussed previously, the end-user 116 interacts with the trigger processing logic 106 via the user interface 114 located on the user client system 112 to invoke the network turbo boost service.

[0022] FIG. 1 also includes an application provider system 102 resident on or in communication with the service provider system 104. The application provider system 102 can request that the network turbo boost service be offered to an end user 116. In order to do this, a request from the application provider system 102 would be included in a triggering preference list located in the trigger profile system 110. The trigger detection system 108 would then detect the request from the application provider system 102. This would cause the trigger processing logic 106 to either offer the network turbo boost service to the end user 116 or to automatically initiate the network turbo boost service. Which action the trigger processing logic 106 takes depends on what is specified in the trigger profile system 110 for the particular trigger and application provider system 102.

[0023] FIG. 2 depicts an exemplary process by which a user may be presented with an option to utilize a network turbo boost service in accordance with exemplary embodiments of the present invention. At step 202, turbo boost triggers are defined. This may be performed by the service provider and/or by the end user 116. As an example, the triggering preferences may be set up by the end user 116 by entering, via the user interface 114, specific destination addresses (e.g., a gaming application address, a video conferencing address). When the end user 116 accesses these destination addresses, the end user 116 is presented with the option of invoking the network turbo boost service. In exemplary embodiments of the present invention, the



end user 116 is presented with a portal to set triggering preferences from a list displayed via the user interface 114. In addition to destination addresses, additional triggering options may be presented to the end user 116 via the user interface 114. In exemplary embodiments of the present invention, these additional options may include being notified: when a large incoming file is detected; when a large outgoing file is detected; when a destination address is on a list of high transmission rate applications (e.g., video conferencing sites, gaming sites); and/or when a request is received from an application that typically requires downloading of application code data (e.g., service packs, software updates). In response to the user entering and/or selecting the triggering preferences, the triggering preferences are stored in the trigger profile system 110.

[0024] At step 204, the trigger detection system 108 monitors the service provider network for events, or tasks, that correspond to the trigger events contained in the end user's 116 trigger preference list located on the trigger profile system 110. Step 204 continues to be performed until a trigger event is detected. When a trigger event is detected, step 206 is performed and the trigger processing logic 106 notifies the user client system 112 that a trigger event has occurred. At step 208, software located on the user client system 112 presents an option to invoke the network turbo boost service for the trigger event, or task, to the end user 116. If the end user 116 does not select the network turbo boost service, as determined at step 210, then the task associated with the trigger event is performed without the network turbo boost service and processing continues at step 204. In exemplary embodiments of the present invention, if the user does not select the turbo boost option, as presented at step 208, within a pre-selected period of time (e.g., two minutes, five minutes) then it is assumed that the end user 116 does not want to enable the network turbo boost service. In this case, the task associated with the trigger event is performed without the network turbo boost service and processing continues at step 204. This feature may be utilized to prevent the suspension of all activity towards completing the task associated with the trigger event until the end user 116 takes an action at step 210. If it is determined at step 210 that the end user 116 has selected the network turbo boost service option, then step 212 is performed and the network turbo boost service is

enabled for the task associated with the trigger event.

[0025] FIG. 3 is a block diagram of illustrative triggers that may be supported by exemplary embodiments of the present invention. The service provider system 104 includes the trigger detection system 108 that seeks to detect the trigger events listed in the service provider trigger monitor/logic box 304. The first type of trigger event that may be detected by the trigger detection system 108 is a request from an application. This occurs if an external application 302 requests that the network turbo boost service be offered to an end user 116 or that the network turbo boost service be invoked directly. The second kind of trigger event listed in the service provider trigger monitor/logic box 304 is a request from a user client. This kind of trigger event occurs if the user client software 306 located on the user client system 112 sends a message that the end user 116 has manually requested that the network turbo boost service be invoked. In addition, this type of trigger event may occur if the client software 306 detects excessive file transfer time (or a timeout has occurred) and because of this the user client software 306 requests that the network turbo boost service option be presented to the end-user 116.

[0026] A third type of trigger event listed in the service provider trigger monitor logic box 304 is where a specific destination address is accessed. For example, the preference list may specify a Microsoft operating system software update address that is typically utilized to distribute operating system software updates. These update files may usually be quite large and therefore, the end-user 116 is to be presented with an option to use the network turbo boost service whenever this site is accessed. A fourth type of trigger event occurs when the size of a file to be transferred is larger than a pre-selected size limit. Other types of triggering events are possible and the trigger events described in reference to FIG. 3 are meant to be examples of some types of triggering events. Any triggering events known in the art may be utilized by exemplary embodiments of the present invention.

[0027] In exemplary embodiments of the present invention, default preference lists may be initially defined by a service provider. These default preference lists may include instructions on whether to automatically invoke a network turbo boost service

for the associated task when a trigger event occurs or whether to present the end user 116 with an option to invoke the network turbo boost service for the associated task when the trigger event occurs. In exemplary embodiments of the present invention, some, all or none of the trigger events in the default preference list may be modifiable by a user. Additional trigger events may be added to the default preference list and kept for a specific user in the trigger profile system. By not allowing a user to modify all of the default trigger events, the service provider can maintain some control over when the network turbo boost service is offered to a user.

[0028] Utilizing exemplary embodiments of the present invention may provide benefits to end users by increasing the frequency of network turbo boost service invocation resulting in a decrease in elapsed processing time. In addition, the service provider may receive an increased revenue stream as a result of proactively offering the invocation of the network turbo boost service to current and potential customers.

[0029] As described above, embodiments can be embodied in the form of computer-implemented processes and apparatuses for practicing those processes. In exemplary embodiments, the invention is embodied in computer program code executed by one or more network elements. Embodiments include computer program code containing instructions embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other computer-readable storage medium, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. Embodiments include computer program code, for example, whether stored in a storage medium, loaded into and/or executed by a computer, or transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via electromagnetic radiation, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. When implemented on a general-purpose microprocessor, the computer program code segments configure the microprocessor to create specific logic circuits.

[0030] While the invention has been described with reference to exemplary

embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims. Moreover, the use of the terms first, second, etc. do not denote any order or importance, but rather the terms first, second, etc. are used to distinguish one element from another. Furthermore, the use of the terms a, an, etc. do not denote a limitation of quantity, but rather denote the presence of at least one of the referenced item.